FAA AVIATION NEWS

DECEMBER 1964

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F E D E R A L A V I A T I O N A G E N C Y

VOL. 3, NO. 8 DECEMBER 1964

COVER

Climaxing a four-year development program, the twin jet, executive *Jet Commander* was recently certificated by the FAA. Pages 8-9.

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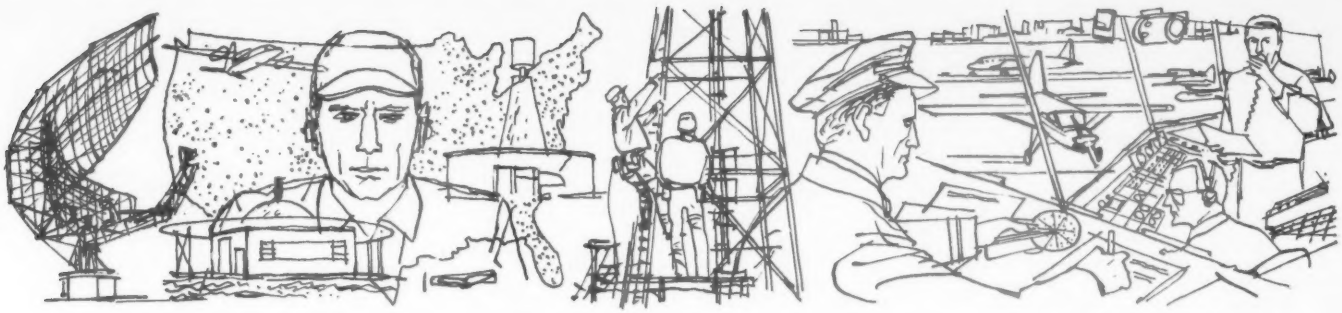


DEAR FELLOW AIRMAN:

I AM ADDRESSING THIS LETTER TO YOU WITH THE AWESOME KNOWLEDGE THAT MANY OF YOU WILL DIE IN PRIVATE AIRPLANE ACCIDENTS BEFORE THE YEAR IS OVER...

Jean Halaby

In a strong personal appeal to the nation's 370,000 pilots, FAA Administrator N. E. Halaby has called for an all-out effort to reduce the tragic number of general aviation accidents and fatalities.

The Administrator stated in a letter sent last month that while the first reaction of many pilots would be, "It won't happen to me," nevertheless more than 480 of them will be involved in a fatal aircraft accident within one year unless each recipient takes "positive action."

"What is even more lamentable," he said, "is that these pilots will take approximately 400 of their friends and members of their personal family with them. In some cases this very letter will arrive a day or two too late.

"If you are shocked by this brutal introduction we will have been successful in calling your attention to an area where needless accidents are resulting in loss of lives.

"It is so shocking," he continued, "to read typical newspaper headlines . . . 'Doctor and four members of his immediate family crash into side of hill at night within two miles of destination.' 'Four friends die in crash while returning from hunting trip—weather blamed.' 'Fatal air crash claims prominent local man—flight caught in weather.' 'Pleasure flight ends in disaster for four—aircraft spun in during approach for landing.'

"Case after case was needlessly caused," Mr. Halaby pointed out. "Aircraft don't get caught in weather, they are flown into it. The aircraft doesn't crash into a mountain, it is flown into a mountain. The aircraft doesn't generally spin in on its own. A spin is usually the result of the man at the controls.

"What we are trying to say is these things don't just happen, people make them happen. We get in a hurry, we let ourselves be shamed into, or talked into, irrational actions and we over-extend our abilities or use bad judgment."

The Administrator emphasized that more than 80 per cent of the fatal accidents in general aviation were the direct result of operational actions, with faulty flying techniques and careless flying the major causes.

"We can legislate, educate or equip against certain factor which cause accidents," the Administrator continued, "but we can't legislate against bad judgment."

He pointed out that the pilot himself has more control over gloomy statistics than any other individual or organization, and he set out nine ways pilots can help reduce accidents:

1. Recognize and operate within your personal limitations.

2. Recognize and operate within the limitations of your equipment.

3. Know your equipment well and how to fly it.

4. Don't take unnecessary risks because of pressing time; if you do, you may run out of all the time remaining in your life.

5. Don't be talked into doing something about which you have personal reservations.

6. Read the . . . pamphlet entitled "12 Golden Rules for Pilots." (Sent to each person who received the letter, these rules also appeared in *FAA Aviation News*, October 1964.) Understand the meaning of each of the rules and apply each of the rules in all of your flying activities.

7. Remember that alcohol and flying is a deadly combination.

8. Above all—use good judgment in your flying techniques.

9. Pass on to me and your fellow airmen ideas for greater flight safety.

"Hopefully, a year from now each of you can be congratulated for having reduced the fatal accident rate," Mr. Halaby added.

INTERNATIONAL AGREEMENT MARKS 2ND DECADE

Twenty years ago, as World War II was drawing to a close, representatives of 54 nations met in Chicago to chart the course of international civil aviation in the post-war world. The result was the Chicago Convention, one of the most significant and important agreements ever concluded on the subject of international civil aviation.

In recognition of this historic event, President Lyndon B. Johnson designated December as "United States International Aviation Month." Official observances also have been planned by various other nations which are members of the International Civil Aviation Organization (ICAO).

Included as a part of the United States observances is a three-day tour of FAA facilities at Oklahoma City and Atlantic City by high-ranking civil aviation officials from some 50 ICAO nations, Dec. 14-16.

The Convention on International Civil Aviation—concluded in Chicago on Dec. 7, 1944—provided a complete modernization of the basic treaty governing the international control and utilization of the air. The convention came into effect on April 4, 1947, after ratification by the necessary 26 nations. Some 106 nations are now members of ICAO.

The Convention also provided the constitution for ICAO, whose aims and objectives (as defined in the Convention) "are to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport."

Another significant achievement was the International Air Services Transit Agreement, commonly known as the Two Freedoms Agreement. Some 65 nations, including the United States, are parties to this agreement which provides for peaceful transit through the air of one another's country and the privilege to land for refueling and repairs.

In addition, the conference did invaluable work in the technical field. Agreement was reached on 12 varied and important phases of air operations including air traffic control practices, communications procedures, meteorological services, airworthiness requirements and accident investigation.

MILESTONES IN AVIATION

One of the first aircraft manufacturers to exploit the new business of flying was Glenn H. Curtiss. He sold his 1909 biplane, the *Golden Flyer*, sometimes referred to as the *Gold Bug*, to the Aeronautical Society of New York. This first sale to a group marked the beginning of the commercial airplane industry in America. The Wright brothers, pioneers of powered flight, who were busy negotiating sales with the U.S. Army's aeronautical branch and with foreign governments, joined Curtiss as a commercial producer shortly thereafter.

The Curtiss 1909 biplane above was manufactured at the Curtiss plant in Hammondsport, N. Y. It was demonstrated in June, 1909 at the Aeronautical Society's headquarters and grounds at the Morris Park Track in New York City.

After launching the commerical aviation industry in America, Curtiss' *Golden Flyer*, and later models of the 1909 biplane, did much to foster public interest in aviation in the new exhibition era of flying. *(Smithsonian Institution Photo.)*

Jumpers Allowed to 'Drift Over' Without Prior Approval from FAA

Sport parachuting rules were relaxed by the FAA to permit parachute jumpers to "drift over" airports without Federal towers, as well as congested areas and open-air assemblies, without having to receive prior FAA approval.

Airports without towers have much less air traffic than the tower-equipped airports.

These new rules, effective Dec. 4, are based on an FAA notice of proposed rule-making issued March 13, 1964, and on the comments received.

Under the amended rules, jumpers drifting over an airport, a congested area or an open-air assembly will have to be high enough to avoid creating a hazard to air traffic, or to people or property on the ground. In the case of drifting over airports, jumpers would have to be at least 2,000 feet above the airport's traffic pattern. Typical traffic pattern altitudes vary from 500 to 1,500 feet.

The amended regulation also clarifies that prior approval from airport managers is needed for an intentional jump over an airport without a tower, as well as for jumps onto any airport.

Prohibitions remain in effect against jumping *into* congested areas or over open-air assemblies unless authorized by the local FAA District Office. Jumping into or through clouds remains prohibited.

Pilots must adhere to the rules insofar as permitting jumps to be made from aircraft they are operating.

In 1963 the nation's 30,000 sport parachutists made more than half million jumps.

Aero Center Will Host Women's Advisory Committee on Aviation

The second meeting of the Women's Advisory Committee on Aviation (WACOA) will be held at the FAA's Aeronautical Center, Oklahoma City, Okla., Dec. 6 to 11.

During the four-day meeting, the committee, headed by co-chairmen, Mrs. Philip A. Hart and Miss Jean Ross Howard, both of Washington, D. C., will meet with key FAA officials and receive intensive briefings on FAA's Aeronautical Center facilities.

Mrs. Margaret K. Boylan, special assistant to William J. Schulte, Assistant Administrator of the Office of General Aviation Affairs, has been appointed an ex-officio member.

SST AIRFRAME AND ENGINE DESIGN EVALUATIONS ARE DUE IN DECEMBER

With submission once again of airframe and engine designs by industry, the United States supersonic transport program has entered a design-evalution and decision-making phase.

The designs were submitted on Nov. 1 by four participating manufacturers. The airframe companies were Boeing and Lockheed; the engine builders General Electric and the Pratt & Whitney Division of the United Aircraft Corporation.

Produced under cost-sharing design contracts awarded by the FAA on June 1, these designs follow the initial design proposals received from manufacturers in January.

Now, following receipt of these second-round designs, the business at hand has been to appraise them from both the technical and economic standpoints.

For this purpose, a government evaluation group of 125 specialists, under the direction of Gordon M. Bain, FAA Deputy Administrator for Supersonic Transport Development, was drawn from agencies and military services concerned, in a procedure paralleling evaluation of initial design proposals earlier this year.

Once again nine of the nation's airlines are taking part in evaluation. In particular, they have been analyzing the submitted designs in terms of their own route structures and equipment requirements. Last March, after evaluation of initial designs, the airlines issued a statement that they were "promising" and recommended that the program go forward.

Both the Government and airline evaluations were scheduled for completion by the beginning of this month, with findings and recommendations going to FAA Administrator N. E. Halaby.

EFFECTS OF SONIC BOOM ON STRUCTURES STUDIED

The FAA study of the effects of sonic booms on typical structures began last month in the New Mexico desert.

The site was the White Sands Missile Range—Holloman Air Force Base complex north of Alamogordo. Booms will not be generated over population centers in this structural study.

Sonic boom study is an essential element of the national supersonic transport development program. FAA conducted a study of public reaction to sonic boom in the Oklahoma City area from Feb. 3 through July 30. A comprehensive report of findings in the Oklahoma City study will be available before the end of the year following analysis of more than 100,000 items of data.

In the new test program, 17 structures will be subjected to booms of varying magnitudes over a two-month study period. They will range in type from a farmhouse to a group of representative store fronts to a greenhouse. Seven of these structures, including the greenhouse and store fronts, have been constructed for the study at the missile test range. Other buildings were already in existence at the site.

The test structures will be extensively instrumented and inspected following boom runs.

The U.S. Air Force will fly aircraft under the direction of FAA to generate the sonic booms. Air Force F-104 supersonic fighter planes, operating out of Holloman AFB, will perform the mission. B-58s and other types may be used a later time. Holloman AFB is providing technical and logistics support for the study program.

The U.S. Army, which exercises management responsibility for the White Sands Missile Range, is providing range facilities support. Sonic boom overpressure level will be two pounds per square foot at the start of the study program. The level will be increased to a planned maximum level of 30 pounds per square foot. As many as 30 boom runs will be flown daily.

Scheduled overpressures in the Oklahoma City program ranged from one to a maximum of two pounds. Design objectives for the United States supersonic transport specify boom maximums in the order of 1.3 pounds during aircraft cruise and two pounds during the period of acceleration to supersonic speed at a lower altitude.

Air Safety Agreements Reached By U.S., Six European Nations

The six-nation European Organization for the Safety of Air Navigation (EURO CONTROL) and the FAA signed an agreement in Washington designed to increase their cooperative efforts in the area of air safety.

Rene Bulin, left, Director General of EUROCONTROL, and FAA Administrator N. E. Halaby, described the agreement as an "important step towards a harmonious, constructive relationship between the U.S. and the six Western European nations in providing safe and efficient air traffic control service for international airspace users."

The six EUROCONTROL nations are: The Federal Republic of Germany, Belgium, France, the United Kingdom, Luxembourg, and The Netherlands. EUROCONTROL headquarters are located in Brussels.

The new agreement opens the way for free exchange of technical information and air traffic statistics through designated FAA and EUROCONTROL representatives.

EUROCONTROL was formed in 1963 to fill the economic and technical need for a single European authority to provide a unified high altitude air traffic control service for today's high speed aircraft which cannot be effectively controlled within national frontiers.

William J. Schulte Receives NBAA Aviation Award

William J. Schulte, Assistant Administrator, Office of General Aviation Affairs, was presented the Meritorious Service for Aviation Award by the National Business Aircraft Association (NBAA) last month at the group's annual convention held at Miami Beach.

During the presentation of a plaque, John H. Winant, retiring NBAA president, and Aubrey Keif, succeeding president, commended Mr. Schulte "for his untiring effort, skill and knowledge which have won widespread and high level governmental recognition of the aims, capabilities and contributions of general aviation."

Mr. Schulte, the eighth aviation figure to receive the NBAA award, is the first government official so honored.

A former businessman and rancher from El Reno, Okla., Mr. Schulte joined the FAA in March 1962.

FAA Flight Assistance Programs To Be Tested at Five Locations

Two new methods of providing flight assistance services at airports will be field tested by the FAA for a six-month period beginning about Jan. 1, 1965.

A part-time two-man Flight Service Facility (FSF) will be evaluated at five airport locations—one in each FAA domestic region. During open hours, the facility will provide the terminal flight services now available at regular Flight Service Stations.

The five FSF test sites are: Delta, Utah; Junction, Tex.; Myrtle Beach, S. C.; Manhattan, Kans., and Watertown, N. Y.

An unmanned Airport Information Desk (AID) will be tried at 16 other locations. It will provide "do-it-yourself" flight planning services and will have current weather information available and direct communications to the nearest Flight Service Station.

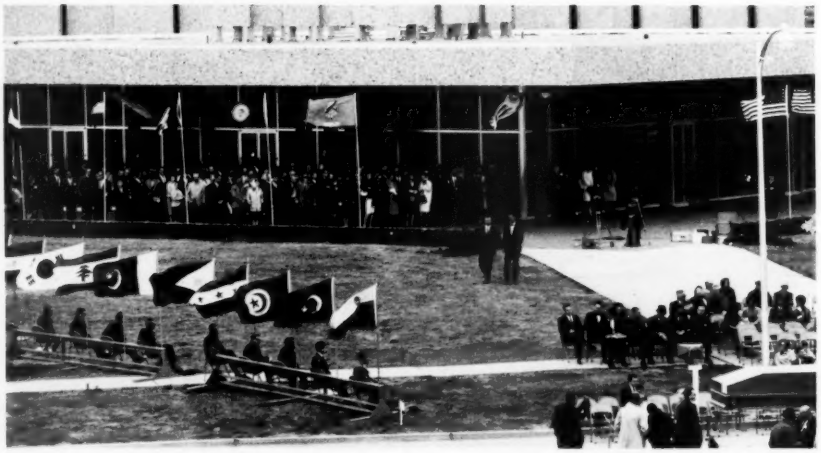
The AID test sites are: Aiken, S. C.; Altus, Okla.; Aspen, Colo.; Auburn, Ala.; Frankfort, Ky.; Jamestown, N. Y.; Kerrville, Tex:; Laconia, N. H.; Lakeland, Fla.; Liberal, Kans.; Marion, Ind.; Mt. Vernon, Ill.; Pittsfield, Mass.; Ruidoso, N. M.; Tacoma Industrial Airport, Wash., and Twin Falls, Idaho.

Purpose of the tests is to determine the validity of a proposed FAA program for modernizing and expanding its Flight Service Station network and to gain experience upon which to determine the optimum operational plan. The proposal should enable the Agency to consolidate almost half of the Flight Service Stations and replace most of them with a part-time FSF or "self-help" AID.

FAA estimates that savings from the proposed consolidation would permit expansion of FSF and AID services to some 440 airports where no Federal facility now exists. The cost of operating this expanded system would be $3 million per year less than the cost of operating the present system. Any extension of services, however, would be subject to Congressional approval.

FAA presently operates 297 Flight Service Stations and 61 combined Station/Towers in the continental United States. They provide enroute services for aircraft such as weather information and in-flight pilot briefings, handling flight plans, operating direction finding equipment and assisting aircraft in trouble. They also provide terminal services including airport advisory service, aviation weather reporting and preflight pilot briefing.

NEW AVIATION RECORDS BUILDING IS DEDICATED



FAA's new $3½ million Aviation Records Building houses the statistical history of civilian aviation. Located at the Aeronautical Center in Oklahoma City, the new three-story building stores records of the sale and maintanence of every aircraft registered in the U.S. and contains the listing of all airmen's licenses and their medical histories.

Since 1927 when compilations began, records on more than 450,000 airmen and 135,000 aircraft have been maintained by the FAA.

The latest computers will process and handle all airmen records, in addition to flight inspection records for 6,000 FAA navaids located around the world.

Among those participating in the building dedication this fall were FAA Administrator N. E. Halaby; Sen. A. S. Mike Monroney (D-Okla.); Gov. Henry Bellmon of Oklahoma; Congressman Tom Steed (D-Okla.); Ben T. Head, chairman, Oklahoma City Chamoer of Commerce; W. Lloyd Lane, manager, FAA Aeronautical Center, and other FAA, state and local officials.

Lending to the color of the dedication ceremonies was a parade led by international students attending the FAA Academy at the Aeronautical Center. Flags of many foreign nations were put on permanent display in the dining area of the building which serves as a focal point for both national and international aviation.

$72 Million Is Allocated for FAAP Improvements

Allocation of $72,609,337 in Federal matching funds for the construction and improvement of 413 civil airports for fiscal year 1965 under the Federal Aid Airport Program was announced by FAA Administrator N. E. Halaby.

The program allocates $19,224,726 for general aviation use exclusively. This includes $8,605,546 for the construction of 86 new general aviation airports and $10,619,180 for the improvement of 164 additional general aviation facilities.

Allocations totaling $53,384,611 are made in the program for 163 airports serving all segments of aviation. This includes $456,500 for four new airports and $52,928,111 for the improvement of 159 additional airports.

The allocations are based on a Congressional appropriation of $75 million for fiscal year 1966. In March 1964, the President signed legislation extending the Federal Airport Act for three years covering fiscal years 1965, 1966 and 1967, but appropriations did not become available for programming until Aug. 30.

Local project sponsors will match the Federal funds generally on a 50-50 basis. In some cases states also provide matching funds. Until grant offers are actually tendered, allocations on projects are tentative and subject to reprogramming.

The current program, as in the past three years, places emphasis on the construction and improvement of airports serving general aviation operations while at the same time providing substantial funds for airports serving all segments of aviation. The tentative allocations were made after careful consideration of 570 requests for Federal aid, which totaled $137 million.

'AIM' REPLACES FLIGHT INFORMATION BOOKLETS

Three basic flight information publications of the Federal Aviation Agency—the *Airman's Guide*, the *Directory of Airports and Seaplane Bases* and the *Flight Information Manual*—will be replaced Dec. 10 by a single streamlined volume, the *Airman's Information Manual* (AIM).

The new publication is designed to serve as a convenient preflight and in-flight reference source for pilots. It will provide basic information needed to plan and conduct a safe flight in the nation's airspace.

Only information of operational value to pilots will be published in the AIM. Administrative and legal notices and other extraneous information contained in existing flight information publications will be eliminated.

The AIM will be divided into five separate sections for use in a loose-leaf binder. Sections will be revised either monthly, quarterly or semi-annually. There also will be a biweekly summary of NOTAMs. Each section will be individually bound and completely replaced when any revisions are necessary. This eliminates the time-consuming task of replacing individual pages or making handwritten changes.

■ Section I of the AIM is the "Basic Flight Manual." It covers all instructional information of a relatively permanent nature such as a description of the various navigation aids and the proper procedures for using them. Also included are procedures for obtaining weather and other flight information, preflight services, inflight services and other similar services. It will be published semi-annually.

■ Section II covers "Air Traffic Control Operational Procedures." Included are Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) procedures, as well as departure, enroute and arrival operating procedures, emergency procedures, and other similar information. Publication will be quarterly.

■ Section III covers "Flight Data and Special Use Airspace." Among other information, it provides a detailed description of the NOTAM code and also covers special notices and a list of the latest U. S. Coast and Geodetic Survey charts and special use airspace charts. Publication will be every 28 days.

■ Section III-A is the "Biweekly Notices to Airmen." This section will include only those NOTAMs which will remain in effect for at least half the time period covered by each issue. Appropriate Airman Advisories and minor changes in Oil Burner Routes also will be included.

■ Section IV—the Airport/Facility Directory—also will be divided into two parts. Section IV-A will include all major and intermediate airports having terminal navigation aids and communications facilities and will be published every 28 days. Section IV will include all other pertinent airports and will be published semi-annually.

The AIM will be sold through the U. S. Government Printing Office. The annual subscription price of $15 will include all amendments for each section in accordance with the revision schedule.

'The FAA' Heads List of New Publications Available

The Federal Aviation Agency, a new 20-page publication describing the Agency's activities, organization and history is now available for 25 cents from the Superintendent of Documents, U. S. Government Printing Office (GPO), Washington, D. C., 20402.

Contact GPO for all paid publications. Publications in the list below marked free are available from the FAA, Distribution Center, HQ-438, Washington, D. C., 20553.

The publications include:

● *U. S. Civil Air Carrier Fleet*, Fourth Quarter, 1963; FAA, free.

● *Airport Paving*, June 1964, AC 150/5320-6; FAA, free.

● *Student Pilot Guide*, AC 61-12; GPO, 15¢.

● *Airport Activity Statistics of Certificated Route Air Carriers*, calendar year 1963; GPO, $2.

● *General Aviation Inspection Aids Summary*, AC 20-72, August 1964; GPO; $1.25.

● *Refresher Courses for Private and Commercial Pilots*, AC 61-10; GPO, 15¢.

● *1964 National Airport Plan, Fiscal Years 1965-1969;* GPO, $1.50.

● *Employment Requirements and Changing Occupational Structure in Civil Aviation*, Department of Labor publication; GPO, 40¢.

● *Communications Procedures*, ATP 7300.1A, July 1, 1964; GPO, $3 domestic, $4 foreign.

● *Private Pilot (Airplane) Flight Training Guide*, 1964, AC 61-2A; GPO, $1.

Agency Has Not Proposed Type Ratings for All Small Aircraft

Judging from reaction to FAA's recently proposed rules on "Pilot Rating Requirements" (Notice 64-42, Sept. 16, 1964), an impression has been gained that type ratings have been proposed to fly any small aircraft. This is definitely not so, according to Edward C. Hodson, Chief of FAA Flight Standards Regulations Staff.

While the intent of the proposal is to raise pilot experience levels in small aircraft having different operational characteristics and handling techniques, the *type* rating is proposed only in the case of small jets—weighing less than 12,500 pounds. Type ratings are not proposed for any small non-turbojet aircraft.

A flight check—not a type rating—is proposed for pilots-in-command of any small complex aircraft, in addition to already required category and class ratings, when "other persons" or passengers are being carried, when the pilot is "flying for pay" or when he is operating the aircraft for remuneration. The conditions "other persons" and "flying for pay" are newly included in the proposed rules.

VECTOR FLYING NOW LIMITED

A new safety rule which prohibits pilots from flying radar vectors issued by air traffic control personnel to pilots of other aircraft unless specifically authorized was adopted last month.

The action was taken to correct a potentially hazardous situation in which pilots simulate instrument operations by following traffic control instructions issued to other pilots who are operating under IFR. This practice seriously impairs controller efforts to establish radar identification of an aircraft.

Requiring aircraft to make turns of 30 degrees or more is a standard traffic control procedure for establishing radar identification. However, when more than one aircraft target is observed making the turn, identification becomes difficult or impossible. Misidentification also may result in some cases.

In recent months FAA has detected several instances of aircraft flying turns and vectors issued to other aircraft. The pilots subsequently said they had been practicing instrument flight operations and had not been aware of the impact their actions had on the air traffic control system.

The agency regards this action as a safety hazard that required immediate regulatory action.

JET COMMANDER RECEIVES

FAA CERTIFICATION

A sleek, low-slung, twin jet business aircraft, the *Jet Commander* Model 1121, produced by the Aero Commander division of Rockwell-Standard Corp., is one of the newest aircraft to be certificated by the FAA.

Although Aero Commander has produced more than 17 different models in more than a decade, the *Jet Commander* is its first aircraft certificated under the more rigid air transport structural, performance and equipment FAA standards.

Formal presentation of the aircraft's type certificate was made by the FAA at the 17th Annual Convention of the National Business Aircraft Association in Miami Beach last month.

The *Jet Commander* carries four to six passengers and crew, climbs at 6,000 feet per minute up to a maximum altitude of 40,000 feet and has a maximum speed of 527 mph.

Its straight, high midwing was designed for a short field and slow flight operations at maximum gross weights. It is equipped to fly from coast to coast, with only one stop, under instrument flight rules (IFR).

Pressurized, the aircraft can cruise at Mach 0.8 and is driven by two General Electric CJ 610-1 jet engines mounted towards the rear of the fuselage. The jets produce 2,850 pounds thrust at take-off.

The first of four existing *Jet Commanders* was completed in January 1963. The second has been used for structural load testing, the third for flight testing, and the fourth is the first production model slated for delivery.

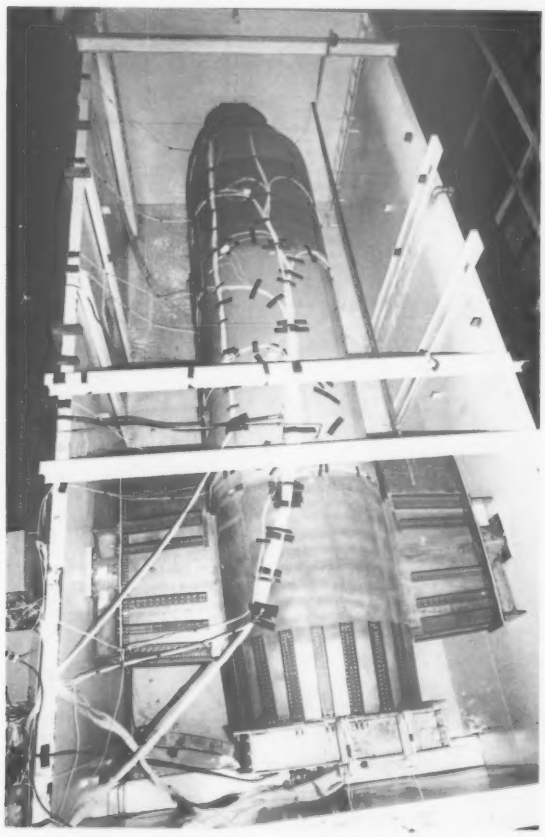
In the exhaustive testing program which is a part of certification under CAR 4b and Special Rule 422b, the aircraft underwent four main phases of testing to: (1) substantiate aircraft loads, (2) confirm static structures, (3) prove the performance and stability of the aircraft and (4) check operational functions and establish reliability proof for all systems and aircraft components.

Static testing of the aircraft included all major sections of the airframe.

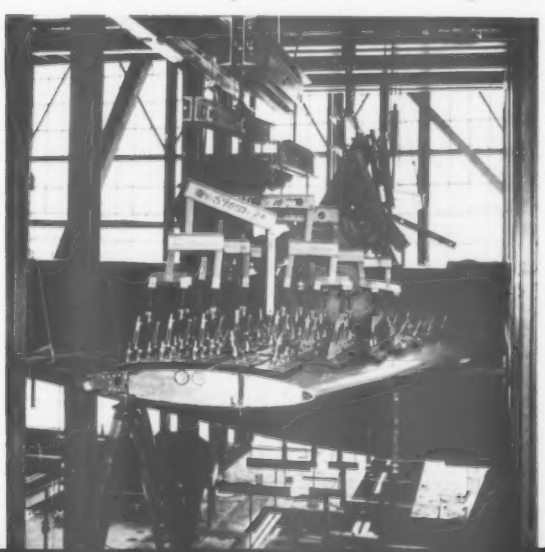
Hydrostatic and dynamic tests of the fuselage pressure system were conducted in a 30,000 gallon tank. Static testing was conducted on a 25-foot high "I" beam rig with the airframe floating from 10 top mounted quarter-inch steel cables.

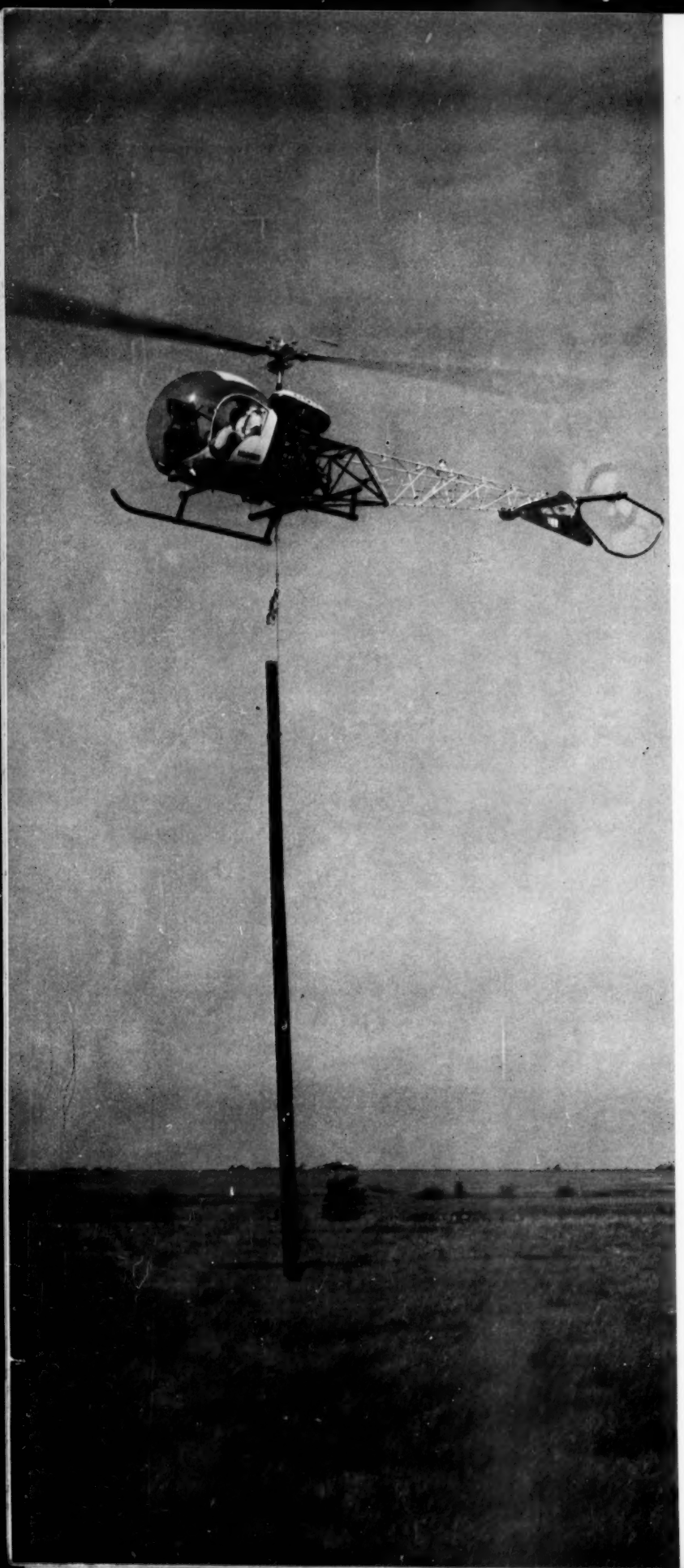
Climaxing a four-year development program, the *Jet Commander* exceeded many of the minimums required to obtain the airworthiness type certificate. Today it joins six domestic and foreign competitors in the executive jet field in providing subsonic travel for our nation's businessmen.

Left, an overhead view of the *Jet Commander* production line at Aero Commander's plant in Bethany, Okla.; above, the high mid-wing and the rear-mounted jets are its distinguishing features.



Above, when filled with water this 30,000 gallon tank is used to test the fuselage pressure; below, a whiffle tree installed on the *Jet Commander's* wing tests effects of increasing loads.





'COPTER TRAINING PICKS UP

The versatility and usefulness of today's helicopter in performing many back-breaking and time-saving tasks has opened new vistas for resourceful operators.

Already proven as an indispensable aid to ranchers, crop dusters, loggers, pipe line patrol inspectors and others, new emphasis is being placed on its use as a "work horse of the sky."

As these uses become increasingly varied—including hoisting water towers and church steeples to the roofs of buildings, erecting poles and large antennas, and rescuing persons and property from nearly inaccessible mountainous and wooded terrain—FAA helicopter specialists have had to return to school to upgrade their training to cope with these new operations.

Not only must FAA operations inspectors from General Aviation District Offices be cognizant of the hazards in 'copter operations, they must also be able to assist operators in the proper use of the aircraft. Inspectors must blend their expertness behind the stick with a special knowledge of operations and regulations.

Specialized operational training is now taking place at the FAA Academy at the Aeronautical Center at Oklahoma City. Here operations inspectors spend two weeks improving their helicopter techniques.

During the course of instruction each inspector-pilot receives 62 hours of classroom work and 18 hours of helicopter flight time.

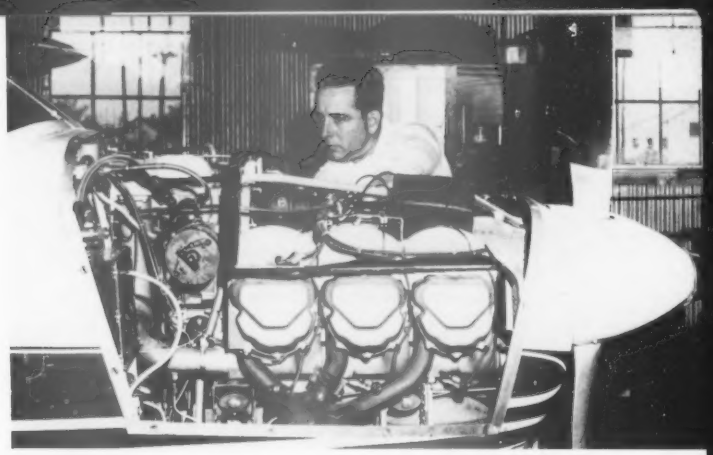
Ten inspectors have already completed their special training and eight others will complete the course before the end of the year.

Flight training for these already-rated 'copter pilots includes a series of rooftop operations and various methods of carrying external loads slung beneath the helicopter.

At nearby Cimmaron Airport, a specially-built 40 by 40 foot helipad, 20 feet in height, is used for much of the specialized training. Water tanks and other obstacles encountered in normal rooftop operations have been installed to simulate flight conditions that might be encountered in actual operations.

In mastering the proper techniques of carrying external loads with the helicopter, long poles and water-filled barrels are lifted to the helipad and then removed.

Upon graduation, inspectors become available to assist helicopter operators in their local areas solve both routine and special problems.



J. R. (Bob) Schneider, below, won the air carrier category and Harry A. Palmer was named as the winner of the general aviation mechanic award.

SAFETY AWARD WINNERS NAMED

Two aviation mechanics who made notable contributions to aviation safety have been named national winners of FAA's second annual Aviation Mechanic Safety Awards Program.

J. R. (Bob) Schneider, of Tulsa, Okla., an aviation instrument mechanic employed by American Airlines, was named winner in the air carrier category. Harry A. Palmer, of Midland, Tex., who is employed as a shop foreman for Champs Aviation, Inc., was selected the general aviation mechanic safety award winner.

Both aviation mechanics, selected from hundreds of entrants, were cited for their significant contributions to aviation safety during 1963.

Selections were made from the FAA regional winners by a committee established by the Flight Safety Foundation. The committee, chaired by James T. Pyle, former CAA Administrator, was composed of nationally prominent aviation officials.

Mr. Schneider was selected for his work in locating and correcting undesirable signals that could affect the safe operation of a transport aircraft's autopilot system.

While working at the Tulsa maintenance base of American Airlines, Mr. Schneider detected the possibility of this signal flaw in an altitude potentiometer of the air data sensor that could affect the autopilot of a Boeing 707 or a Lockheed Electra during automatic landing approaches. His discovery prompted an engineering directive to the entire American Airlines maintenance organization explaining the possible danger and recommending specific precautions to be taken. While the directive was being carried out, he devised a method of checking potentiometers to eliminate these unwanted signals.

Mr. Schneider joined American Airlines as a clerk in 1947 after serving in the U. S. Army. In 1949 he was stricken with poliomyelitis and became paralyzed from the waist down. After spending 100 days in the hospital, he enrolled in Tulsa's Spartan School of Aeronautics. There he was one of two members of a class of 18 to complete the 13-month course on aircraft instruments. While learning a new profession, Mr. Schneider had to teach himself how to walk. At graduation, although doctors said he would be an invalid the rest of his life, he stepped up to the podium to receive his diploma and embarked in his new career as an aviation instrument mechanic.

Despite his handicap, Mr. Schneider has won 12 American Airlines suggestion awards and has devised several instrument testing devices, including an altimeter multi-tester that won him a letter of commendation from American this year.

Mr. Schneider is married and has three daughters.

Mr. Palmer, winner in a national general aviation category, spent three and one half years majoring in petroleum engineering at Texas Tech College prior to joining the U. S. Air Force at Gary AFB, San Marcos, Tex., in 1951. After serving more than three years in the military as a chief maintenance inspector and flight line chief, he went to work for Champs Aviation, Inc., at Lubbock, Tex., as an aviation mechanic. He later transferred to the company's establishment in Midland, where he is now stationed.

His selection as general aviation safety award winner was for his determination of the cause of a fuel leakage in certain models of the Cessna aircraft.

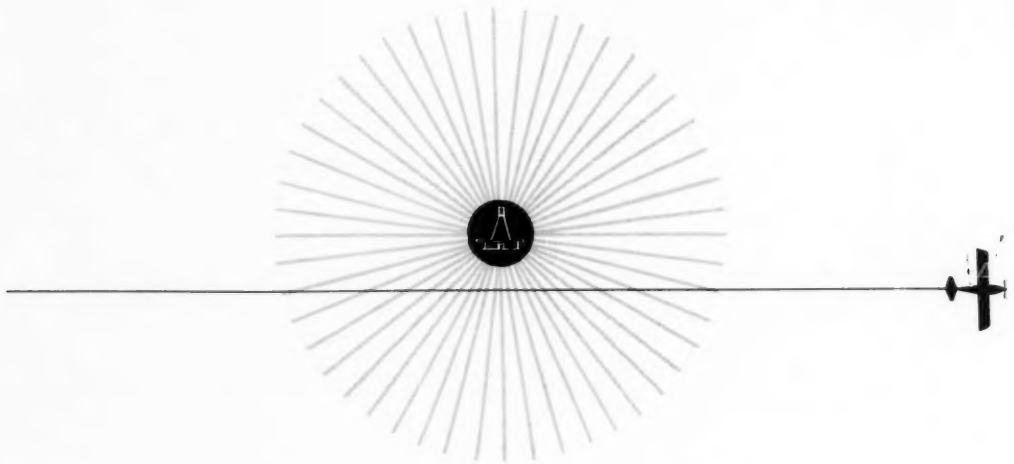
After months of methodical checking, Mr. Palmer found evidences of intermittent fuel leakage on several Cessna 210 B and C aircraft in the lower fuselage area. He gradually traced the leak to the fuel strainer valve located in the nose gear well. His investigations revealed that the "O" ring on the valve was improperly seated, permitting fuel to seep out and run into the fuselage.

His findings, reported to the airplane manufacturer and the FAA, led to a Cessna aircraft service letter recommending a fuel strainer drain body change in Cessna aircraft. Changes were made on production models and a completely interchangeable strainer was made available to correct older model aircraft.

Mr. Palmer is married and has four children.

Both national winners will receive their national award medallions at a special presentation ceremony in Washington this month. Trophies for the national and regional winners were provided by American Aviation Publications, Inc.

Last year's winners were John Motta, a TWA aviation mechanic of Torrance, Calif., air carrier winner, and Norton G. Stubblefield, superintendent of the aircraft shop for Morrison-Knudsen, Inc., Gowen Field, Boise, Idaho, general aviation winner.



RADIO NAVIGATION

This is the ninth and concluding article of the series on aerial navigation.

Although more sophisticated aids to navigation are available, the general aviation pilot will probably find radio navigation the most useful aid for his everyday flying.

Radio navaids, such as the VOR or very high frequency omnirange, the four-course low-frequency range, and the automatic direction finding (ADF) or radio compass, provide the pilot with navigational guidance, enroute communications, and methods of making dead reckoning corrections.

New and improved types of navigation equipment have been developed to make flying safer and easier. The VOR system of navigation, which has generally replaced the low-frequency radio range system, is now being modified to include the military developed TACAN (tactical air navigation). The modified system is called VORTAC.

VORTAC is comprised of a standard VOR and the TACAN. It provides bearing information to both the civil pilot using VOR equipment and to the military pilot using the TACAN. In addition, the VORTAC provides distance measuring information for all aircraft equipped with distance measuring equipment (DME). It measures the distance in nautical miles away from the VOR.

VOR, which is virtually free from precipitation static and electrical storm interference, operates on a frequency band of 108 and 118 megacycles. Unlike the four-legged low-frequency range, it has 360 radials or courses, one for each degree of a circle.

These radials extend from the omnirange, which is a VHF radio transmitter that projects courses in all directions (omni means all) from the station, like spokes of a wheel. These spokes or radials are defined as "lines of magnetic bearing extending from an omnidirectional range (VOR)."

Some of the advantages of omnirange flying are:

1—A flight may be made to a VOR from any direction by flying the course to the station. There are 360 courses to or from a VOR station.

2—A flight may be made to any destination from the station by selecting the proper radial. *Remember that VOR radials, as shown on aeronautical charts, are always from the station, never toward.*

3—When within range of two or more VORs, a fix may be determined quickly and easily by taking bearings on each station and determining position on the proper aeronautical chart.

4—It provides static-free reception and the elimination of the complex orientation procedures previously required of instrument flights using low-frequency ranges.

5—It has a higher degree of accuracy, normally plus or minus two degrees.

Because VOR signals, like other VHF transmissions, follow an approximate line-of-sight course, a pilot must maintain sufficient altitude to receive the signal. As altitude is increased, the VOR reception distance is likewise increased. The chief disadvantage of VOR is that flying below line-of-sight blocks out the signals and renders the system useless.

On aeronautical charts, VORs are indicated in blue. The degrees on the azimuth circle are magnetic degrees, and the data about the omnirange is contained in a small box within the VOR circle. The information includes the name of the station, such as Pellston Radio; the station frequency in megacycles, 111.8; station code letters, PLN, and the Morse code identification of the station. If voice facilities are not available, the phrase "no voice" will be noted.

In the United States, the identification of VOR stations is

made with three-letter designations. Some stations are also identified by an automatic voice recording. For example, the St. Louis VORTAC is identified by the usual Morse code identification of STL alternating with the voice identification "St. Louis VORTAC."

VOR stations are listed in the *Airman's Information Manual*. In the case of Pellston, Mich., the manual lists it as "L-BVOR". The "L" indicates the power output of the station. In this instance, the normally anticipated altitude service for the VOR facility is up to 15,000 feet MSL and the normally anticipated interference-free distance service is 45 statute miles. The "B" refers to its scheduled weather broadcasts at 15 and 45 minutes after the hour.

In addition to its primary use to fly the federal airway system, the omni has many other uses. It can be used (1) to determine position, (2) to determine directions when flying inbound on a radial, (3) to fly out from a station on a radial, (4) to "home" into a station and (5) to intercept a desired radial.

Volumes have been written on VOR navigation. It is suggested that the reader desiring detailed VOR navigation instructions consult his local certificated ground school instructor for a course in omnirange navigation.

The *low frequency range (LF/MF)* was the principal air navigation aid in the United States until the advent of the omnirange system. The LF/MF ranges were placed in use at a time when comparatively few airplanes were in operation, and four courses were ample for navigation and air traffic control.

Many aircraft today are equipped with the *automatic direction finder (ADF)* or radio compass. It operates in the low- and medium-frequency bands. By tuning to low-frequency radio stations such as four-course ranges, radio beacons, and commercial broadcast stations, a pilot may use ADF for navigation in cross country flying. The most common use of ADF is that of homing. Another useful ADF procedure is to obtain radio bearings on two or more radio stations to establish a radio fix position. The frequencies of these navaids used with the ADF are listed in the *Airman's Information Manual (AIM)*. Although frequencies are also listed on aeronautical charts, the pilot should consult the *AIM* for the most current frequency information. Charts are published every six months and consequently may not contain the latest data.

To illustrate the use of radio aids in a VFR flight, let us assume that a pilot is making a flight from Manistee, Mich., direct to Traverse City omni, from there to Pellston, Mich. After drawing the courses on a Green Bay sectional and completing other preflight planning, the pilot would be ready for take-off.

With his omnireceiver tuned to the frequency of the Traverse City VOR (112.4), he listens carefully for Morse code identification of Traverse City radio. Next, he turns his course selector (omnibearing selector) until the LEFT-RIGHT (vertical) needle centers at the on course position of the dial and the TO-FROM indicator indicates TO the omnirange. When established on the correct course, the course selector should then read 054°, which is the magnetic course to the station. Keeping the needle centered by making flight corrections toward the needle to return to course, he flies directly to the station. As the pilot passes over the Traverse City station, the LEFT-RIGHT needle may swing sharply back and forth (directly over the station), and the TO-FROM indicator then settles on the FROM, indicating that he is now heading away from the station.

Correction for wind and magnetic variation has not been mentioned because each is automatically compensated for when the pilot makes heading corrections to keep the LEFT-RIGHT needle centered. Since all radials from an omnirange are magnetic rather than true bearings, magnetic variation is corrected in the omnirange itself. Wind drift correction is made automatically by the pilot when he "crabs" the proper amount to keep the needle centered, enabling him to fly a straight-line course to the station.

An interlocking system of VOR stations form the nation's airways.

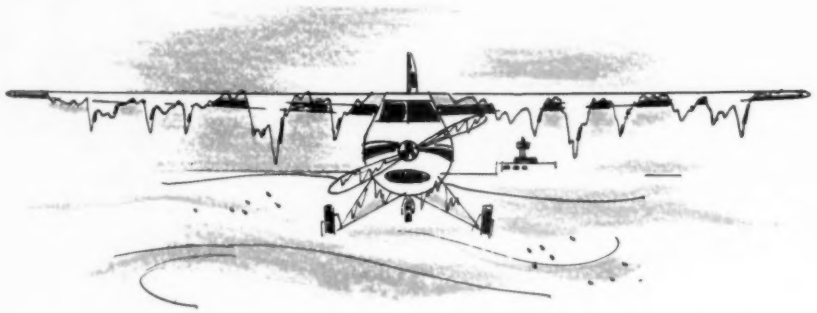
After passing the Traverse City omni, the pilot turns his course selector to 035°, the outbound radial from the Traverse City VOR to Pellston omni. After making sure the TO-FROM indicator shows FROM, he simply keeps the LEFT-RIGHT needle centered by turning toward the needle to stay on course. After flying approximately half way to Pellston, he would change over to the Pellston VOR frequency (111.8). Then the TO-FROM indicator would shift to TO and the bearing would still be 035° to the station. After passing over the Pellston omni, he would shift the selector to read 245° and turn left to head away from the station. This would bring the pilot right over the destination airport, Emmet County Airport, located approximately eight statute miles southwest of the Pellston omni.

When a LF/MF, or low-frequency range station is located at the destination, a pilot can use it to "home" into the final destination or to check out the accuracy of the dead reckoning or pilotage navigation he may have been using for the cross country flight.

Radio navigation, and particularly VOR, has simplified navigation for the pilot. To obtain the greatest use from these radio navaids, however, it is recommended that a pilot take recurrent training to brush up on navigation techniques and practice them regularly. A pilot well-trained in aerial navigation will fly more safely and with greater confidence.

SAFETY FIRST

Winter Flying



The wintery months present added problems to the flier. Unless additional maintenance and operational care is taken to prepare for winter hazards, serious injuries may result.

Some of the best guides for winter aircraft operations are the aircraft and/or engine handbooks provided by aircraft manufacturers who recommend proper oil and fuel, and the best methods to protect the aircraft.

The best recommendation that can be given to the pilot is: Be winter wise! Winterize!

Certain practices, if followed by the pilot during the winter season, will contribute to safer and troubleless flying. Keep these safety checks in mind:

- Help prevent condensation in airplane fuel tanks by filling the tanks after each flight. Water in fuel lines can affect engine performance or even result in a frozen fuel line. It is advisable to drain a substantial amount of fuel from the lowest point, where condensation gathers, before each day's flight and after each refueling.
- Check engine manufacturer's instructions and change to the proper oil for winter operations.
- Check cabin heaters for safe operation. Cracks or holes in a heater can cause deadly carbon monoxide to seep into the cabin. While small amounts of carbon monoxide affect a pilot's judgment and flying ability, larger amounts over a period of time can cause serious illness, unconsciousness or death.
- Remove snow and ice from the wings and control surfaces of the aircraft before take-off. An airfoil produces lift because of its shape—ice, frost, snow, etc., can change its shape. Blowing and drifting snow frequently enters openings in the aircraft. The additional weight may affect the center of gravity of the plane.
- Preheat both the engine and oil, if possible, to prevent oil sluggishness and possible congealing. When preheating the engine, use safe, accepted methods. Never use an open flame device.
- Use carburetor heat at all times on the ground until the throttle is opened for take-off. (Consult your aircraft engine manual for winter operation procedures.) Engines will run too lean when the temperature gets very low. Carburetor heat will richen the mixture and help vaporize the fuel.
- Check carburetor heat or alternate air control to determine whether it is working properly throughout its entire range. Also, check the carburetor or induction air temperature gauge for proper indications. It is the pilot's ice warning device.
- Careful attention must be given to retractable landing gears and wheels equipped with "wheel pants." Clogging of mechanisms by ice and slush and collection of ice, mud, etc., thrown onto surfaces from spinning wheels can create a serious problem.
- Because winter days are short, pilots not checked out for night operations should plan their flights accordingly.
- Plan on longer landings because of increased stopping distances on icy, snow-covered or wet runways.
- Icing problems are the pilot's greatest hazard during winter flying. The effects of icing can be remedied with proper de-icing equipment and procedures.
- Ice formations on wings and other external surfaces may form slowly or at a dangerously high rate, depending upon the temperature and the form of moisture present. Icing is most probable when flying in air with visible moisture (clouds, drizzle, rain or wet snow) and at temperatures from approximately 20° F to 34° F. Flying through freezing rain can spell immediate trouble.

Types of icing conditions a pilot is apt to encounter during winter months are:

- Ice on outside pitot and static pressure sources and venturi units. This results in erroneous airspeed, altimeter and rate-of-climb indications. On airplanes using an outside venturi unit to provide power for vacuum driven instruments, ice can cause faulty turn and altitude indications.
- Accumulation of ice on propeller surfaces. This creates a serious vibration problem and loss of propeller effectiveness.
- Accumulation of dangerous ice loads on the wing and tail surfaces. This changes the airflow and reduces the available lift while increasing the load the wing has to carry.
- Carburetor icing and air intake clogging. Both result in loss of power. When snow or sleet form on the intake screen, the buildup starves the engine of air and causes loss of power. Remember, air intake clogging cannot be eliminated with carburetor heat.
- Windshield icing. Obscuring vision, this condition is particularly dangerous when a pilot is attempting to make an approach and landing. It may be necessary to open a window or de-ice the windshield to make a safe landing.

If a pilot finds himself in icing conditions without full de-icing equipment, his primary concern should be to make the best possible use of the equipment available and to get to non-icing air as quickly as is safe. Descending below the icing level to warmer air should melt the ice that has formed. In some areas, the icing level can be at the surface.

To avoid the icing hazard, a pilot should (1) check weather conditions before flight, (2) check weather conditions enroute and (3) watch the outside air temperature gauge carefully to note temperatures favorable for external icing. Be safe and remember. Be winter wise! Winterize!

Letters

FAA

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

● Changing Name on Certificate

My name was legally changed recently. What must I do to make the change on my pilot's license and to renew the license?

Name withheld

According to FAR Section 61.13(a) *an application for a change on a pilot certificate must be accompanied by the applicant's current certificate and the court order or other document verifying the name change. The documents are returned to the applicant after inspection.*

Your local FAA General Aviation District Office (GADO) will be pleased to assist you in executing the appropriate application upon presentation of the required papers. If you prefer, the "Application for Student Pilot or Private Pilot Certificate" may simply be mailed to your local GADO.

● Recodification

Please refer to your Notice of Proposed Rule Making as published Aug. 26, 1964, in Part 121 (New), of the *Federal Register*, which pertains to "Certification and Operation: Domestic Flag and Supplemental Air Carriers and Commercial Operators of Large Aircraft." I wish strongly to object to this proposed rule making.

The necessity for further Government regulation in the present instance is questionable.

Name withheld

The Notice to which you object is a part of the recodification program and is not intended to add to, or to revise, the substance of existing regulations.

The objective of the Agency's recodification program is simply to combine and streamline the material and place it in simplified, accessible form. The propsed consolidation is a change in the numbering, style and terminology of the regulations as they stand today. In addition, every effort has been made to eliminate overlapping provisions, delete obsolete material, and restate the remainder as clearly and concisely as possible. The consolidation would reduce the present regulations by approximately 65 per cent.

● Which Way Is North?

Your article "Navigational Instruments," unfortunately, continues to perpetuate the erroneous concept that the needle of the magnetic compass points to the magnetic pole. This is not true.

The needle of the magnetic compass points in the direction determined by the local horizontal component of the magnetic field. The compass may point many degrees away from both magnetic pole and the North Pole. For example, in regions of North Dakota and Montana the compass will point as much as 12 degrees east of the magnetic pole. Much larger differences are observed on other portions of the earth.

The concept that the compass points toward a magnetic pole is one of the most common misconceptions found in the scientific literature. I hasten to add, however, that no error is introduced if a person always applies the local variation of the compass to his compass reading in determining his true direction. The isogonic lines that appear on most navigation charts enable the user to correct for the difference between the direction in which the compass actually points and true north.

Many of your readers may be interested in a Department of Commerce pamphlet entitled "Magnetic Poles and the Compass," Serial 726, 2nd (1961) Edition.

Professor James J. Skiles
University of Wisconsin
Madison

Oversimplification can lead to misunderstanding and we are pleased to help end the perpetuation of the misconception mentioned. The pamphlet which Professor Skiles mentions—available for 10¢ from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C., 20402—lists a number of misconceptions pertaining to the compass and the magnetic poles. The pamphlet explains that the compass "points in the direction of the horizontal component of the magnetic field where the compass is located, and not to any single point."

● Recent Flight Experience

Please give your interpretation of FAR 61.47, "Recent Flight Experience," as it pertains to the following examples:

A pilot is current in a Cessna 150. Is he current in a Cessna 172?

A pilot is current in a Cessna 150. Is he current in a Aeronca 7AC?

G.E.T.
Clinton, Okla.

FAR Section 61.47(a) provides, "No person may act in command of an aircraft carrying passengers unless, within the preceding 90 days, he has made at least five takeoffs and five landings to a full stop in an aircraft of the same category, class, and type."

Part 1 (New) of the FARs defines "type," as it is used in respect "to the certification, ratings, privileges and limitations of airmen," as meaning "a specific make and basic model of aircraft, *including modifications thereto that do not change its handling or flight characteristics."*

A pilot current in an aircraft of a specific type (specific make and basic model) would not be current for the purpose of Section 61.47(a) in an aircraft of a different type. Therefore, a pilot current in a Cessna 150 would not be current in an Aeronca 7AC since they are different makes, and a pilot current in a Cessna 150 would not be current in a Cessna 172 since they are different models.

● Foreign Hours Count

I should like to inquire as to regulations concerning U.S. citizens piloting aircraft outside the United States. Would instructions taken outside the United States be acceptable credit toward a U.S. private pilot's license? Would flying time outside the states apply toward the 40 hour minimum flying time necessary for such a license?

C.W.Y.
Patrick AFB, Fla.

Flight instruction received outside the U.S. is acceptable aeronautical experience under Federal Aviation Regulations providing it is given by the holder of a valid U.S. flight instructor certificate with suitable ratings, and is properly logged. Solo flying experience acquired outside the United States may be credited toward the total experience requirements for a private pilot certificate issued by the FAA.

● Pilot Examination

My purpose in writing is to call attention to the "aeronautic skill" portion of the private and commercial pilot's examination.

I feel that more emphasis should be placed on two areas of the oral examination: knowledge of the aircraft and basic aerodynamics, and ability to gather and evaluate actual weather data.

D.H.P.
San Antonio

Phase I of the FAA Flight Test Guides *for both private pilot and commercial pilot ratings require knowledge of the aircraft and basic aerodynamics insofar as airplane performance and operations are concerned. Phase III of the* Private Pilot Flight Test Guide *and Phase IV of the* Commercial Pilot Flight Test Guide *contain items which require the applicant to gather and interpret pertinent weather information.*

FAA requirements are, of course, based on what is considered an absolute minimum. Any evidence supporting the need for an increase in requirements will be given the utmost consideration.

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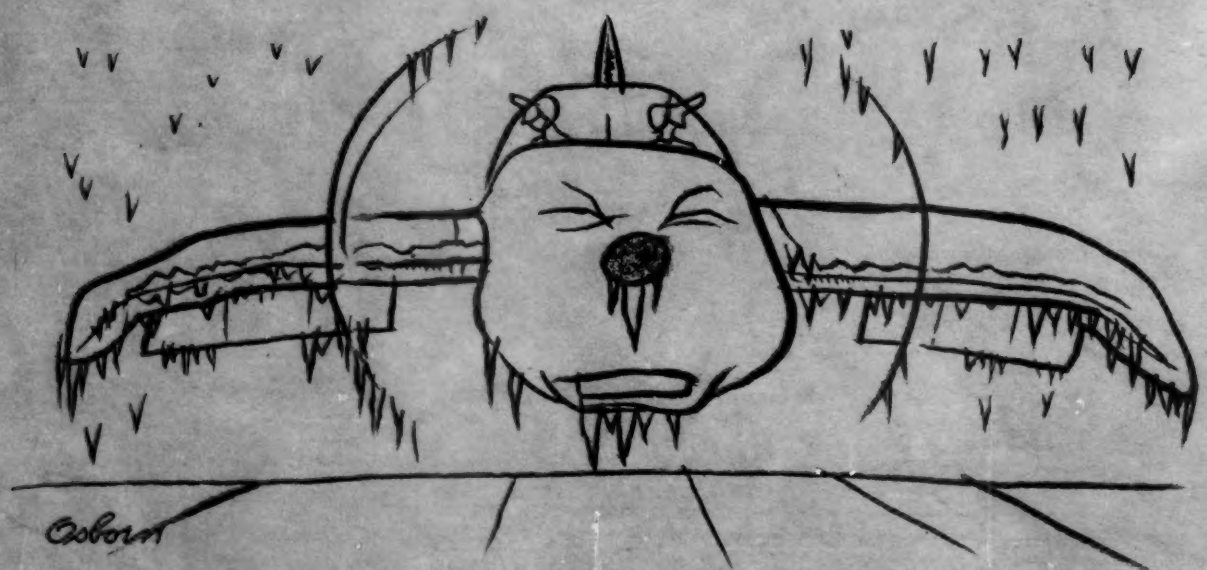
Winter flying hazards are



Just a little over par.